

EXAMINER'S AMENDMENT

The application has been amended as follows:

Please amend claims: 109, 111, 116, 119, 120, 121, and 122.

Please enter claim: 110.

Claim 109: A system for predictably enhancing the nutrient value of distillers, brewers or fermenters grain byproducts, and for producing a protein feed or feed supplement end product having a crude protein content of over 30% of the feed or feed supplement end product composition on a dry matter basis, and at least one of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein [or], (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, or (3) having a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

{system-determining-means-for-determining-the-desirable-levels-of-crude-protein,
UIP/RUP, amino-acid-and-post-ruminal-digestibility-in-an-end-product}

system mixing [means] apparatus for [creating] mixing a distillers, brewers or fermenters grain by-product-nutrient source mixture having an enhanced nutrient value by adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, or sunflower meal into wet distillers, fermenters or brewers byproducts based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and

system adjusting apparatus [means] for adjusting the temperature and/or the moisture content of the enhanced nutrient value by-product-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner to produce said end product,

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula:

$$\text{UIP (\% of CP)} = (\text{End Product Temperature } ^\circ\text{F} \times 0.819) - 107.644.$$

Claim 111: The system of claim 109, wherein the system adjusting apparatus [means] is provided for providing the temperature in a range that causes denaturation of the protein of the by-product nutrient source mixture.

Claim 116: The method of claim 115, wherein the bypass protein (RUP/UIP) level of the end product that is over 50% and up to about 83% of the crude protein is approximately 2.44 times the bypass protein (RUP/UIP) level in the wet distillers, brewers, or fermenters grains before the crude protein, and/or amino acid content nutrient sources are added [starting by-product solubles nutrient source mixture].

Claim 119: A system for predictably enhancing the nutrient value of distillers, brewers or fermenters solubles, and for producing a protein feed or feed supplement end product for having a crude protein content of over 30% on a dry matter basis of the

feed or feed supplement end product composition, and at least one of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, or (3) having a post ruminal digestibility of the UIP/RUP of over 60%, and up to about 94% comprising:

[system-determining-means-for-determining-the-desirable-levels-of-crude-protein,
UIP/RUP, amino-acids-and-post-ruminal-digestibility-in-an-end-product.]

system [~~determining~~] mixing apparatus [~~means~~] for [~~creating~~] mixing a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, or sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and

system adjusting apparatus [~~means~~] for adjusting the temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner is provided for producing said end product,

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula:

$$\text{UIP (\% of CP)} = (\text{End Product Temperature } ^\circ\text{F} \times 0.819) - 107.644.$$

Claim 120: A system for predictably enhancing the nutrient value of distillers, brewers or fermenters solubles, and for producing a protein feed or feed supplement end product for having a crude protein content of over 30% on a dry matter basis of the feed or feed supplement end product composition, and at least two of (1) a UIP/RUP content of over 50% and up to about 83% of the crude protein, (2) amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, or (3) having a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

[system-determining means-for-determining-the-desirable-levels-of-crude-protein, UIP/RUP, amino-acids-and-post-ruminal-digestibility-in-an-end-product]

system [determining] mixing apparatus [means] for [creating] mixing a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, or sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources to create an enhanced nutrient value by-product-nutrient source mixture of the distillation or fermentation byproducts; and

system adjusting apparatus [means] for adjusting the temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude

protein (CP) to an end product temperature in a predictable and repeatable manner is provided for producing said end product,

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula:

$$\text{UIP (\% of CP)} = (\text{End Product Temperature } ^\circ\text{F} \times 0.819) - 107.644.$$

Claim 121: A system for predictably enhancing the nutrient value of distillers, brewers or fermenters solubles, and for producing a protein feed or feed supplement end product having a crude protein content of over 30% on a dry matter basis of the feed or feed supplement end product composition, and a UIP/RUP content of over 50% and up to about 83% of the crude protein, amino acid levels in the crude protein and in the RUP/UIP of greater than 1% and up to about 2% methionine and 2% and up to about 8% lysine, and having a post ruminal digestibility of the UIP/RUP of over 60% and up to about 94%, comprising:

[system-determining means-for-determining-the-desirable-levels-of-crude-protein, UIP/RUP, amino-acids-and-post-ruminal-digestibility-in-an-end-product.]

system [~~determining~~] mixing apparatus [~~means~~] for [~~creating~~] mixing a distillers, brewers or fermenters grain by-product solubles-nutrient source mixture having an enhanced nutrient value by adding one or more crude protein and/or amino acid content nutrient sources comprising canola meal, soybean meal, or sunflower meal into wet distillers, brewers or fermenters solubles based on the crude protein, UIP protein, amino acid content, UIP/RUP amino acid content of the added nutrient sources; and

system adjusting apparatus [means] for adjusting temperature and/or the moisture content of the enhanced nutrient value solubles-nutrient source mixture based on an empirically derived relationship that relates the UIP as a percent of the crude protein (CP) to an end product temperature in a predictable and repeatable manner is provided for producing said end product,

wherein the empirically derived relationship that relates the UIP as a percent of the crude protein (CP) is adjusted according to the following formula:

$$\text{UIP (\% of CP)} = (\text{End Product Temperature } ^\circ\text{F} \times 0.819) - 107.644.$$

Claim 122: The system of claim 119, wherein by adjusting temperature and/or moisture content the system adjusting apparatus [means] for providing a bypass protein (RUP/UIP) level of the end product that is over 50% and up to 83% of the crude protein increases the bypass protein (RUP/UIP) level to approximately 2.44 times the bypass protein (RUP/UIP) level in the wet distillers, brewers, or fermenters grain by-product solubles before the crude protein, and/or amino acid content nutrient sources are added [starting by product solubles nutrient source mixture].

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KELLY BEKKER whose telephone number is (571)272-2739. The examiner can normally be reached on Monday through Friday 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571) 272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Kelly Bekker/
Examiner
Art Unit 1794

/Keith D. Hendricks/
Supervisory Patent Examiner, Art Unit 1794